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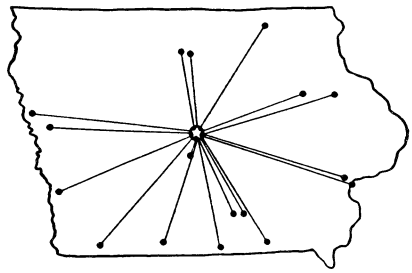
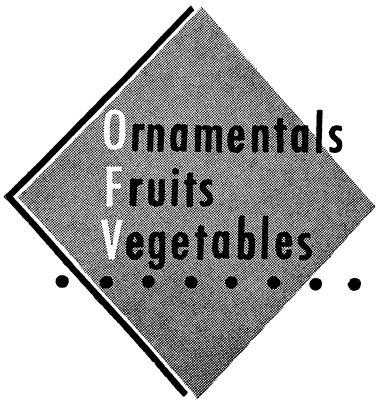
Your Experiment Station Reports

Iowa Farm Science Editorial Board

YOUR EXPERIMENT STATION REPORTS . . .





Use Caution With 2,4-D Near Grapes

VOLATILE DRIFTS of 2,4-D have caused considerable growth damage to Concord grapes in commercial vineyards in southwest Iowa and at the Bluffs Experimental Fruit Farm. Because of uneven ripening of the fruit in 1954, for example, two pickings were necessary. H. L. Lantz of the Iowa Agricultural Experiment Station says there's considerable evidence that this uneven ripening may be due to the volatile drifts of 2,4-D.

Carefully controlled test applications of 2,4-D over a 2-year period have shown that the fruit of Concord failed to ripen following a light-rate application made in July. Lighter rates sprayed on the fruiting shoots caused uneven ripening of berries in the bunches.

Control Wireworms With Insecticides

EARLIER STUDIES by the Iowa Agricultural Experiment Station have shown the value of aldrin applied in the transplant water for the control of wireworms in sweet potatoes.

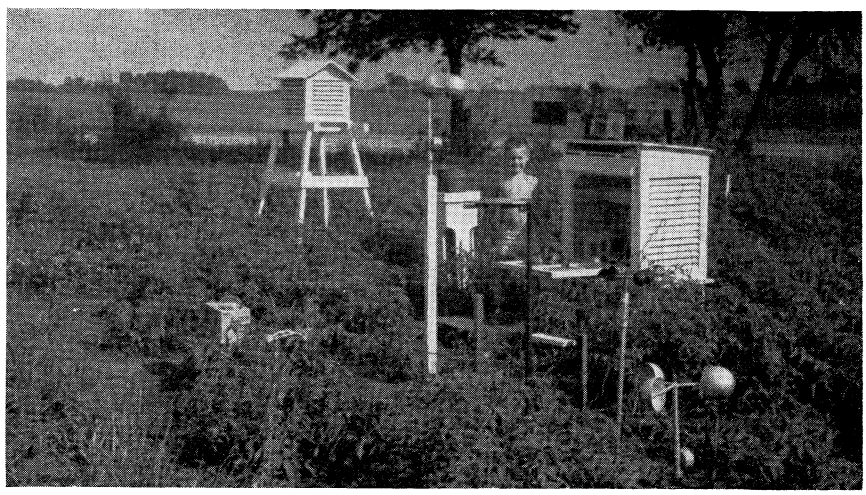
In 1954, with normal temperature and moisture conditions, aldrin at ½, ¼ and ⅛ pounds per acre and endrin and heptachlor both at ½ and ¼ pounds per acre, gave almost 100-percent control of wireworms with no reductions in yield. In the untreated plots, 13 percent of the sweet potatoes were damaged by wireworms.

Seek Control Of Late Blight

TOMATO AND POTATO late blight is being studied extensively under the direction of J. R. Wallin of the Iowa Agricultural Experiment Station in cooperation with the USDA. The most important purpose of the studies is to discover characteristics of the blight which will give a clue as to how to forecast and more effectively control the disease.

Some of the information sought is: the relationship between the blight and weather conditions; the characteristics of different variations within isolates of the blight; positive evidence of the existence of the sexual stage of the blight; additional data on the influence of soil infested with late blight on tomato and potato.

Such information is helpful in forecasting the development of late blight. Forecasts issued last year for Iowa, Indiana, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota and Nebraska correctly predicted late blight development. The development or absence of late blight in 19 locations was indicated by the hygrothermograph data obtained from each location.



This photo shows the late blight forecasting weather station. Late blight development is related to temperature and relative humidity conditions. Such information helps in predicting what will happen.

Seek Disease-Resistant Vegetable Varieties

SWEETCORN, potato and onion varieties resistant to pests and diseases common to the Corn Belt are the goals of breeding studies by the Iowa Agricultural Experiment Station in cooperation with the USDA.

Major emphasis in the sweetcorn studies is on European corn borer resistance. Resistance to potato diseases such as late blight, scab, virus "X" and leaf roll is being sought in the potato-breeding studies. The onion-breeding studies are intended to find varieties resistant to pink root and adapted to long day-length areas. Onion storage and planting problems are also being studied.

Test Herbicides With Vegetables On Sandy Soils

CHEMICAL HERBICIDES have been tested to learn their value in controlling crabgrass with vegetable crops on sandy soil. These tests were conducted for 3 years at the Muscatine Island Experimental Farm by Lewis Peterson and E. P. Lana.

With sweet potatoes, Sesin 50W at 2 to 4 pounds per acre gave effective control as indicated by the saving in labor to hand weed, and there was no reduction in yields. N-1 naphthyphthalamic acid (Alanap) at 4 pounds per acre gave excellent weed control but caused serious damage to the sweet potato leaves.

The most effective time to apply the herbicides was after the first cultivation, 10 to 19 days after transplanting to the field. Applying the chemicals immediately after planting caused a serious reduction in the stand, and treating after the second cultivation saved very little labor since few weeds emerged after this time.

In the tests with muskmelons, two formulations of Alanap and Premerge were used at three different rates per acre. Alanap in wettable powder and emulsion forms gave excellent control of crabgrass when sprayed on the soil surface immediately after seeding. In the case of the muskmelons, there was no damage to the plants nor reduction in yield from using Alanap. Premerge failed to give satisfactory weed control.

Post-emergence applications of all herbicides made after the first cultivation of muskmelons resulted in practically no saving in hand labor since few weeds emerged at this time.

Muskmelon, Watermelon Varieties Recommended

In variety tests with muskmelons at the Muscatine Island Experimental Farm, five new varieties were tested to compare with Hales Best 936. Golden Delight again performed well in 1954, and it is recommended for those desiring a large muskmelon of the Queen of Colorado type. Harvest Queen matured 7 days later than Hales Best 936. The fruits of Woodside's Winner average too small for most muskmelon markets.

Four new varieties and nine introductions of watermelons were tested on both wilt and wilt-free soils. Charleston Gray (USDA-51-27) produced high yields of quality watermelons on both wilt and wilt-free soils for 3 seasons.

Study Fertilizer Use On Potatoes, Watermelon

THREE YEARS' results with trial plantings have shown that potatoes can be produced profitably on sandy soil like that at the Muscatine Island Experimental Farm, A fertilizer ratio of 1-2-2 at 1,500 to 2,000 pounds per acre and irrigation at 2- to 3-day intervals were indicated by this study.

Fertilizer studies were also conducted with watermelon. Previous research showed that 50 pounds of nitrogen in addition to pre-planting applications produced the highest yields. The possibility of producing similar yield increases by applying all the nitrogen before planting was studied. One year's results show no yield difference between before-planting and side-dressed applications of nitrogen.

Key personnel in these studies were Lewis Peterson and E. P. Lana.

Test Sweet Potato Performance, Yields

AS A PART of the "pre-regional" variety test in cooperation with the USDA, the Iowa Agricultural Experiment Station tested 29 new selections of sweet potatoes during the past year. These selections also were grown in soil-rot infested soil to test for possible resistance.

Four of the varieties showed good resistance as indicated by the higher yields of marketable sweet potatoes. Orange Little Stem and Nemagold (Okla-46) were outstanding in performance, and they are recommended for planting in Iowa. Goldrush performed well and is recommended for those desiring a Porto Rico type sweet potato.

Key personnel in these tests were Lewis Peterson, E. P. Lana, W. J. Hooker and Don Fronk.

Study Effects Of Fertilizer On Sweetcorn

FERTILIZER studies with sweetcorn are being conducted by the Iowa Agricultural Experiment Station. The major problem under study is why sweetcorn doesn't respond to basic fertilizer applications on the Webster soil types insofar as gross yield of snapped corn is concerned. Sweetcorn spacing and methods of planting also are being studied.

E. P. Lana and John Pesek are working on these studies.

Test Growing Practices On Dry, Sandy Soils

THE SOIL TYPE at the Muscatine Island Experimental Farm is a Buckner coarse sand. This soil dries out rapidly, and supplemental water is needed for maximum production. Getting enough water for irrigation isn't a problem since the water table is relatively high and the veins are easily tapped by shallow wells. The crops produced are mainly vegetable crops — sweet potatoes, muskmelon and watermelon.

Overhead irrigation has become well established in the area, and melons and sweet potatoes cannot be grown on the coarse sand without irrigation. Irrigation is now

being used at more frequent intervals to produce maximum yields rather than just to hold the crop between rains. However, it is necessary to adjust fertilizer rates and to change other cultural practices to benefit fully from the increased use of irrigation.

Three-year experiments with various fertilizer rates and water levels on sweet potatoes show the following results. NPK combinations were applied at three different rates—700, 1,200 and 1,700 pounds per acre. Amounts of water tested were (1) 1 inch of supplemental irrigation at 7-day intervals and (2) 1 inch every 3 to 4 days.

The 3-year average shows the 1,200-pound rate produced very profitable yield increases over the 700-pound rate at both water levels. The 3- to 4-day water interval produced higher yields than the 7-day interval in 2 years out of 3 at the 1,700-pound fertilizer rate only.

Spacing and Mulching Of Strawberries Studied

WHAT ARE the effects of different spacing arrangements on everbearing strawberries? Can other arrangements be used which would increase strawberry yields over those from the customary matted-row plots? Do summer mulches increase yields?

These and several other questions on the spacing and mulching of everbearing strawberries are being studied by research workers at the Iowa Agricultural Experiment Station. Key personnel in these studies are E. L. Denisen, R. H. Shaw and C. C. Doll.

Seek Hardy Roses In Breeding Studies

HARDY, EVERBLOOMING garden-type roses of both the bush and climbing rose types are the goals of breeding studies conducted by the Experiment Station in cooperation with the American Rose Society. Several seedlings have matured enough for evaluation as to hardiness and garden desirability. They have been selected for further testing.

Plants of six selections (Tom Maney, Lois Maney, Prairie Moon, Maytime, an unnamed white shrub rose and an unnamed red hybrid tea) were distributed to test gardens in Iowa and neighboring states for evaluation. In tests at the Iowa State College gardens, the rose Tom Maney has been consistently better than average of its class in hardiness and garden quality.

Studies have also been made of the morphology of bud-graft unions containing alien tissues. Griffith J. Buck has been directing these studies.

List Highest Yielding Strawberries

STRAWBERRY VARIETY yield tests at the Iowa Agricultural Experiment Station showed the best yielding varieties to be: Robinson, Dunlap, Armore, Sioux and Arrowhead. Others in the trials were Vermillion, Premier, June Rockhill, Sparkle and Temple.

These variety yield tests were conducted under the direction of E. L. Denisen.

List Roses Resistant To Blackspot Disease

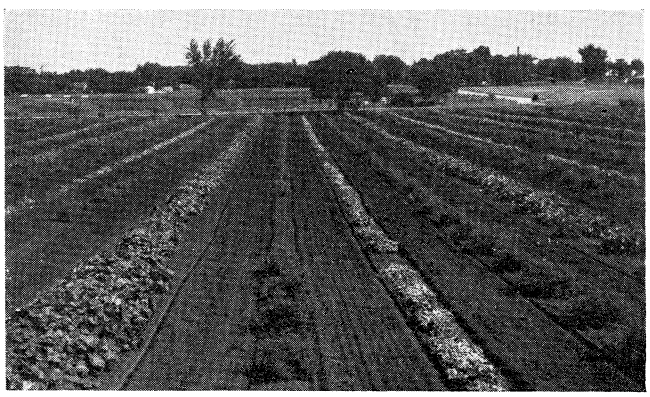
BLACKSPOT, a foliage disease of roses, is a constant problem in Iowa. In spite of the drouth during the growing season of 1954, blackspot was present in almost epidemic proportions.

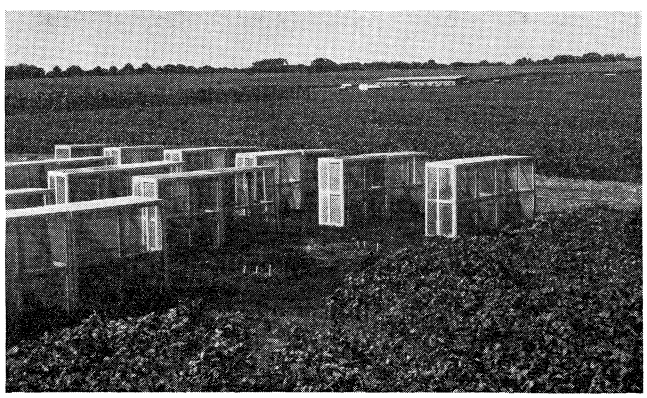
Some of the everblooming roses that were grown in test gardens at Iowa State College showed a high degree of resistance to the disease. These were: Charlotte Armstrong, Dean Collins, Morning Stars, Gruss an Teplitz, Hon. Lady Lindsay and Autumn Bouquet. As a group, the varieties of Rosa alba and Rosa gallica seemed highly resistant to blackspot.

The development of roses resistant to blackspot is a part of a larger study on the propagation and breeding of roses conducted by Griffith J. Buck of the Iowa Agricultural Experiment Station in cooperation with the American Rose Society.

Floribunda Selected As "All America" Rose

ONLY ONE new rose variety was named an "All America" winner in the 1954 All America Rose Selections competition. The double-flowered multicolor floribunda entry Circus was the only new va-





The Plant Introduction Station at Iowa State College aids Iowa and other experiment stations in the North Central Region by assembling plant species from all over the world. It increases and maintains seed stocks of these for use in improving crop plants. At left is a general view of the field production of tomatoes and vine crops. Screen cages (right), with bees for pollination agents, are used to increase seed of beets, carrots, onions, celery and cabbage. Max M. Hoover is regional coordinator.

riety selected from a field of 22 hybrid tea varieties, 21 floribunda varieties and 4 climbing roses.

Circus is a pink and gold bush rose combining excellent plant habit, disease resistance, vigor, attractive glossy foliage and continuous blooming to make it a superior garden decorative. This new rose can be highly recommended for all season bedding effects, says E. C. Volz of the Iowa Agricultural Experiment Station.

Iowa State College conducts one of 22 official trial rose gardens in the United States. These trial gardens cooperate with the American Rose Society and the All America Selections Committee in making the All America rose selections.

Test Growth Inhibitors On Strawberry Runners

RUNNERS often cause strawberry beds to become overcrowded, and the plants compete among themselves. When this happens, it's necessary to thin out the beds, which adds to the cost and labor used to produce the fruit.

Horticulturists at the Iowa Agricultural Experiment Station are testing the use of chemical plant growth inhibitors to cut down runners and eliminate the necessity of thinning.

Preliminary tests show that maleic hydrazide and dichloral urea are effective in runner inhibition and appear to offer possibilities for their use to avoid overcrowding in strawberry plantings.

However, E. L. Denisen warns that a number of questions remain unanswered, and that several precautions must be kept in mind. Dosage and time of application need to be studied further. The periods of fruit bud differentiation and fruit bud development seem to be critical stages for application of both growth regulators. Reduced yield or death of the plants resulted with each use of the growth regulators during these periods.

Recommended New Flower Varieties

SEVERAL NEW varieties of petunias have shown superior merit in the Iowa State College garden trials. These varieties include Rhapsody (a double purple), Popcorn (white) and Crusader (pink and white).

Other new annuals deserving special mention are Golden Fleece (celosia), Pacific Beauty and Orange Frills (calendulas), Man-in-the-Moon (African marigold), Tangerine (French Marigold) and Sunny Boy and Tangerine (zinnias).

These trials of new flower varieties are conducted by E. C. Volz.

Chemical Control Of Crabgrass Tested

VARIOUS CRABGRASS chemical control studies have been conducted by the Iowa Agricultural Experiment Station under the direction of H. L. Lantz. Major emphasis in 1954 was on preemergence chemical control.

Test plots on a crabgrass infested golf course fairway were treated with various herbicides. Crag 1 applied on June 29 (about 3 weeks before crabgrass seed germination) and on July 29 gave excellent results. The Crag 1 plots were among the best.

DCU (dichloral urea) applied June 29 gave complete control of crabgrass but slowed down growth of the bluegrass for about 2 months, though the bluegrass was distinctly greener in color than in other plots.

Phenyl mercuries applied at the 2-leaf stage and at weekly intervals thereafter for 3 or 4 weeks gave satisfactory control. Milorganite containing 4 percent potassium cyanate applied in August during early crabgrass seed-head formation produced excellent control.

Question Value Of Mulching Greenhouse Roses

GROWTH of greenhouse roses with three different types of mulches was studied by Fred B. Widmoyer and C. H. Sherwood of the Iowa Agricultural Experiment Station. They found that the value of mulching greenhouse roses still is questionable.

There seemed to be an improvement in aeration, water and general nutrients in the soil from the use of the mulches. But there was very little difference in the production of roses under the mulches as compared with roses grown without mulches. This is an interesting observation since improvement of aeration, water and soil nutrients has been credited for the increased production of roses grown by soilless culture methods.

Develop Jonadel, New Apple Variety

DEVELOPING a new fruit variety doesn't happen overnight. Crossing, growing and testing new fruit seedlings can take many years of work. For example, in studies with apples, the cross Jonathan x Delicious was made in 1923. By 1935 the seedlings of this cross were bearing some fruit.

Ames 611 (now Jonadel) was a selection of this cross. It was propagated for nursery tests in 1943. Trees were planted in a trial orchard in 1945, and in 1954 Ames 611 was named Jonadel.

In 1953 the Department of Horticulture in cooperation with the Committee for Agricultural Development and the research committee of the Iowa Nurserymen's Association agreed upon a plan whereby Jonadel trees were to be propagated and formally introduced to the trade. The long process of crossing, growing and testing took 30 years — and the testing isn't over yet.

Jonadel is a tree of good orchard habit, appears to have a marked resistance to fire blight and is moderately productive — more time is needed here to establish its productiveness. The fruit has good commercial characteristics as to size, form, color and storage.

Delcon is another apple variety being tested by the Iowa Agricultural Experiment Station. H. L. Lantz reports that Delcon appears to be a dwarf apple without the intervention of dwarf stock. The tree is spreading in habit; the fruit is medium size, red and good in quality. As grown in the experimental orchard, Delcon appears to be primarily adapted to home orchard growing.